CHAPTER 5

PROCEDURES FOR OPERATIONAL SERVICES

A. INTRODUCTION

Operational Services refer to the precise actions necessary to fulfill the mission of the DoD Data Administration Program and to the use of the data administration final products. The products of this main activity are standard data, managed data in databases, and personnel trained and educated in data administration.

B. MANAGE DATA ADMINISTRATION ACTION PLANS

1. Manage Action Plans

a. Description: This process manages the acquired resources and tasks identified in data administration action plans. Data administration action plans describe the resources, tasks, and schedules for building the Technical Infrastructure and providing the Operational Services.

b. Purpose: To provide clear, concise, and cost-effective direction to recognize process improvements and adjust data administration action plans accordingly. To assist in prioritizing activities and resource allocation.

c. Inputs:

(1) Acquired resources.

(2) Approved data administration action plans.

(3) Proposals for process improvement (Implementation Plans and FEAs).

d. outputs:

(1) Progress reports.

(2) Adjusted data administration action plans.

e. Activities:

(1) Monitor and assess progress of data administration action plans.

(2) Report progress of data administration action plans.

(3) Adjust data administration action plans.

2. Monitor and Assess Progress of Data Administration Action Plans

a. Monitoring and assessing the progress of data administration action plans is essential to the success of the data administration activities in each Functional Area and Component, as well as to the success of the DoD Data Administration Program as a whole. Monitoring and assessing the progress of data administration action plans is the means through which the actual accomplishment of tasks is controlled (i. e., project management).

b. As the data administration action plans in the approved DoD DASP and Functional Area and Component data administration plans are implemented, the DoD DAd and each FDAd and CDAd evaluate their success in meeting the goals and objectives in their respective areas by monitoring and assessing the progress of the data administration action plans. The criteria for action plan assessments are provided in the DoD Data Administration Annual Planning Guidance memorandum prepared by the DoD DAd.

3. Report Progress of Data Administration Action Plans

a. Progress reports are generated as a result of monitoring and assessing the progress of the various tasks, schedules, budgets, contracts, etc. contained in the data administration action plans.

b. The DoD DAd periodically provides progress reports to the DASD(IM).

c. The DoD DAd may also request progress reports from the FDAds and CDAds, and provide feedback, as deemed necessary.

4. Adiust Data Administration Action Plans

a. Data administration action plans are adjusted based on results from DASD(IM) guidance or approved proposals for data administration process improvements. As a functional activity, data administration must implement the functional management process as described in the ASD(C3I) Memorandum (reference (h)).

b. The DoD DAd, the FDAds, and the CDAds are responsible for reviewing and evaluating proposals for process improvement for their respective areas (i.e. Implementation Plans and FEAs) before submitting them to their respective OSD PSA or Component Head for approval.

c. Approved proposals, as well as the direct DASD(IM) guidance resulting from the review of progress reports, are the basis for adjusting data

administration action plans throughout the fiscal year. The DASD(IM) may provide implementation guidance or recommend additional adjustments to the data administration action plans.

d. The DoD DAd, CDAds, and FDAds may adjust data administration action plans as needed for their specific internal data administration activities.

e. Major adjustments to the DoD Data Administration Program action plans may cause adjustments to Functional Area and Component data administration action plans. Normally, FDAds and CDAds are not required to resubmit adjusted data administration action plans; annual data administration plans are submitted as a requirement of DoD data administration planning. However, the DoD DAd may require a special submission of Functional Area and Component-adjusted plans to ensure that they enhance the area's performance and continue to support goals and objectives of the current DoD DASP's.

C. CONDUCT DATA COLLECTION, SYNCHRONIZATION, AND DISTRIBUTION

1. Data Collection, Synchronization, and Distribution

a. Description: This activity manages data and metadata throughout its life-cycle by performing data configuration management, assessing data quality, providing data security, and providing for data collection, storage, and distribution. As a result, opportunities for improving data administration and other activities are identified.

b. Purpose: To provide accurate, timely, and shareable data.

c. Inputs:

(1) Data models.

(2) Standard data.

(3) Policies and requirements set by the DoD DAd, FDAds, and CDAds.

(4) Information technology infrastructure resources.

d. outputs:

(1) Accurate, timely, shareable data.

(2) Physical data models

(3) Subject area databases.

(4) Inputs to information system planning.

e. Activities:

(1) Provide data configuration.

(2) Provide data quality.

(3) Provide data security.

(4) Provide data collection.

(5) Provide data storage.

(6) Provide data distribution.

(7) Provide technical support for data collection, synchronization, and distribution.

2. Provide Data Configuration

a. Providing data configuration involves maintaining data configuration inventories, performing change assessment services, and controlling the data configuration change process.

b. The inventories of data configurations contain information about the logical and physical data models that reside in the DDRS. These data models are controlled by the appropriate FDAds and CDAds and are stored in the DDRS using the tools and methods specified by the DoD DAd. Updates to these data models are made as data and data relationships change through FPIs, requirement changes, or performance tuning.

c. Change assessment is performed when new data requirements are specified by proposed functional process improvements. FDAds and CDAds determine the impact of these proposed changes. The costs of accessing and using existing data or the cost of migrating the current systems to support the new data are determined and included in the FEA for the proposed FPI.

d. Control of the data configuration change activity resides with the FDAds in Functional Areas and with CDAds in Components, but it is actually database administrators and technical development activities who implement the changes to the data configurations, application software, and physical database schemas. FDAds and CDAds prepare a change plan to guide the AIS PM and the

technical development activity in implementing these changes. The DoD DAd will arbitrate cross-functional and/or cross-Component conflicts.

3. Provide Data Quality

a. After data quality requirement are defined, the process of providing data quality is divided into three activities or steps:

(1) Measure data quality.

(2) Analyze data quality.

(3) Improve data quality.

b. DoD Data Administration must ensure that DoD operations and decision-making are supported with data that meets needs in terms of availability, accuracy, timeliness, and integrity. Therefore, FDAds and CDAds must provide the quality of data throughout the data life-cycle. (See Appendix A.) The define activity focuses on identifying data quality parameters and establishing metrics. The measure activity focuses on measuring and assessing the data quality. The analyze activity focuses on identifying root causes of errors, establishing a poor-quality costs baseline, and analyzing opportunities for improvement. The improve activity focuses on developing and executing improvement initiatives for correcting data defects, and recommending functional process improvement (FPI) initiatives.

c. Evaluate Data Quality Assurance Progress. Measurement, evaluation, and reporting are essential elements of managing data quality. These elements focus on the effectiveness of improvement efforts and identify areas for future improvement efforts. The DoD DQE methodology provides the DAd with a means for identifying and assigning responsibility for corrective actions. A data quality baseline is always established in a DQE effort. The DAd can then use the baseline to assess progress toward achieving data quality by conducting periodic, identically configured DQE evaluations on the database. This provides a comprehensive indication of compliance with the quality requirements and reduced cost over a specified time period. When evaluating cost, there must be a determination of what is the acceptable percentage of defect data (target parameters) versus the cost of obtaining zero data defects. As part of the data quality assurance evaluation process, action plans should be reviewed by the DoD DAd, FDAds, or CDAds for the achievement of data quality assurance objectives and overall objectives for data quality should be reviewed and updated according to validated improvements. Finally, all procedures for data quality assurance should be re-evaluated.

d. Review, Approve, and Implement Data Quality Assurance Recommendations. Data quality recommendations may focus on developing and executing Functional Process Improvement (FPI) initiatives to reduce future data

defects. Any system and/or process defects found as a result of the DQE effort should be forwarded to the FAPM for correction. The FAPM should also identify and analyze root causes of data defects, identify opportunities for systems and/or process improvements, and prepare an implementation plan for approval in accordance with the ASD(C3I) Memorandum (reference (h)). All DoD employees will need to participate in implementing data quality improvement efforts. This reinforces the idea that managing data quality is not a program, but rather a new day-to-day behavior for the entire DoD.

e. The FDAds and CDAds must perform quality control activities to track corrections, inspect, and evaluate plans to ensure adequate quality control, and review format test plans to ensure that data quality is properly addressed. Once improvement recommendations are approved and executed, the data quality must be reanalyzed to measure improvements against the established baseline as part of a continuous improvement process for managing data quality. DBAds also must conduct continued analysis to ensure data quality is being maintained, and correct any defects and or shortcomings detected or report them to the FAPM for corrections elsewhere.

4. Provide Data Security

a. After data security requirements are established, providing data security involves two steps:

(1) Implement security measures.

(2) Perform security assurance evaluations.

b. Data security measures are implemented and enforced by DBAds. They reconcile requests for access and other data security related issues and maintain the security level for each data element as documented in the DDRS or other published specific security documents.

c. Ongoing data security assurance evaluations are completed by FDAds, CDAds, and the DoD DAd to ensure that data security measures are enforced.

d. Provide data security at the operational level will include, but not be limited to, data backup and control of user identification and passwords. Control of user identification and passwords will include verification and authentication of user's need to know, user's clearance, and user's date of authorized access as well as the date the user is no longer authorized. When the data and/or database includes purchased data, control of non-government user access to the purchased data or software must be consistent with any use, release, or disclosure requirements applicable to the data or software.

5. **Provide Data Collection**

Once the data collection capability has been acquired, the data undergoes quality assurance evaluations to verify that all requirements are met. The sources from which data have been acquired must be monitored to maintain an audit trail to introduce historical quality measures.

6. **Provide Data Storage**

a. Once data are collected, the data must be maintained following the procedures for data quality and security. This ensures that the data can be accessed only by authorized users, and that the data are accurate and timely. DBAds are responsible for instituting procedures to track and document all changes to database-related items.

b. When data are no longer current, they are generally archived depending upon the requirements of the mission for which the data were used. The use of standard data in manual systems, forms, reports, messages, and publications must be considered before it is archived. Archived data, while not current, are still useful, and are sometimes required by law or regulation.

c. AIS PMs ensure that the data are archived in accordance with DoD 8320.1 -M-1 {reference (f)). FDAds will identify the data entities along with associated attributes and relationships that are no longer an information or functional requirement. The DoD DAd will establish the effective date for archiving the data and notify the registered users.

7. **Provide Data Distribution**

After acquiring the capability for data distribution, the data is distributed to the various locations and/or individuals. The DBAd is responsible for this distribution which is managed by the AIS PM. The DBAd develops distribution strategies, using guidance from the DoD DAd that has been given to the appropriate Functional Area or Component, to change physical locations of data when required in response to mission activities such as troop deployment, technical infrastructure failures, or degradation that prevents acceptable availability or responsiveness of the data to a critical application(s). Loads on the networks due to access of data at particular locations are monitored and analyzed to keep the data distribution tuned to the distribution of applications using data. Based on the data distribution strategies and published guidance from the DoD DAd, the DBAd moves physical data when performance persistently stays below required availability and responsiveness levels.

8. **Provide Technical Support**

a. DBAds have the responsibility for the operational implementation of

databases, from designing the physical database schemas and user views to guaranteeing the integrity and efficiency of the data access activities. The AIS PM helps manage these responsibilities.

b. The ultimate goal of database design is to produce a database at a minimum cost to users that supports maximum shareability of data and retains the integrity of the logical data model. The DBAd's goal is to provide the necessary design specifications for these physical databases. The design specifications include a physical data model based on the approved logical data model. The design process is iterative and involves trade-offs among performance, cost, and requirements. Any changes to the implementation of the logical data models would have to be documented and approved by the appropriate FDAd(s) or CDAd(s).

c. Implementation of the physical database schemas is completed by technical development activities in conjunction with DBAds and functional activities. This implementation includes creating the physical data structures on some storage medium, loading data values into those structures, and providing both appropriate access to, and security of, the database.

D. PROVIDE CUSTOMER SERVICE AND TRAINING

1. Provide Customer Service and Training

a. Description: This activity provides customer service and supports DoD Data Administration across the Department.

b. Purpose: To ensure correct and efficient implementation of DoD Data Administration.

c. Inputs:

(1) Procedures.

(2) Requirements.

(3) DoD Directives, Instructions, and Manuals.

d. outputs:

(1) Personnel trained in data administration.

(2) Personnel trained in database administration.

e. Activities: Provide customer service and training classes.

2. The DoD DAd is responsible for providing customer service and training to the Functional Areas and Components to ensure that data administration is effectively and efficiently implemented. The data administration community is responsible for identifying training needs to the DoD DAd. FDAds and CDAds need to project training costs in their data administration plan.

E. USE DDRS

1. Use DDRS

a. Description: This tool is used to support the administrators and users of the DoD Data Administration Program.

b. Purpose: To ensure a common tool and data for complete interoperability within the Department of Defense.

c. Inputs:

(1) Data models.

(2) Data elements.

(3) Data entities.

(4) Metadata values.

d. outputs:

(1) Standard data descriptions.

(2) "As Is" Data Models

(3) "To Be" Data Models

e. Activities: Use DDRS.

2. The DDRS is accessed and used by many members of the DoD data administration community to support their information and information systems needs. The DDRS will be used to disseminate data products to Component and Functional Area information systems and functional users (action officers and decision-makers) throughout the Department of Defense. Technical development activities will use the DDRS to identify DoD standards for use in AISS and application software.

3. The DDRS is used to:

a. Research existing standard data, and/or submit proposed new standard data.

b. Effectively facilitate the coordination of approved data standards across DoD organizations.

c. Resolve data standards conflicts.

F. USE DoD DATA MODEL

1. Use DoD Data Model

a. Description: This product primarily is used to support the administrators of the DoD Data Administration Program.

b. Purpose: To map out the current and future organization and structure of data within the Department of Defense.

c. Inputs:

(1) Data entities.

(2) Data attributes (elements).

(3) Information requirements.

(4) Changing business needs.

d. Outputs: Organized and structured data capable of being reconfigured to suit changing business needs.

(1) Standard data entities.

(2) Standard data attributes (elements).

(3) Relationships between data entities.

(4) Standard data structures.

e. Activities:

(1) Develop organized data.

(2) Reverse engineer data.

(3) Identify data entities, data attributes, and relationships among

data entities.

2. Develop Organized Data

The DoD DAd and the DAPMO will use the data component of the DoD Enterprise Model in developing organized and structured standard data entities and attributes capable of being reconfigured to suit changing business needs. To develop a data management strategy between the "As Is" data model(s) and the "To Be" data model(s), a series of target data models may need to be developed using the Enterprise Model as a "blueprint" for transition.

3. Reverse Engineer Data

FDAds and CDAds in conjunction with subject matter experts will use the DoD data model to reverse engineer nonstandard data into standard data consistent with the DoD Data Model. Input to a well-populated data model can be used to identify and re-engineer weaknesses in established or submitted data structures.

4. Identify Entities, Attributes, and Relationships

FDAds and CDAds identify data entities, data attributes, and relationships among data entities. These data entities and attributes are used to create standard data elements to be implemented in information systems and used in forms, publications, reports, records, messages, and screens. They are also used to link different Functional Area and Component data models to the DoD data model. Data entities and relationships are used to document and maintain business rules used by functional managers. FDAds, CDAds, and DBAds use data attributes to audit data values. When non-standard data is identified it will be forwarded to the responsible Technical Development Activity and DBAd for correction.

G. USE STANDARD, QUALITY DATA

1. Use Standard, Quality Data

a. Description: This product is used to ensure unambiguous horizontal and vertical data exchange within the Department of Defense resulting in consistent decision-making.

b. Purpose: To support informed management decisions.

c. Inputs:

(1) Management inquiries.

(2) Standard data elements, entities, and structures.

d. Outputs: Integrated, consistent DoD decisions.

e. Activities: Use standard, quality data.

2. Standard, quality data are Goals Two and Four of the DoD Data Administration Program. (See section F. of- Chapter 1, above.) Use of this product is critical to successfully implement horizontal and vertical, integrated data sharing within the Department. All members of the data administration community must strive to use standard, quality data whenever possible; and, even more importantly, strive to make standard, quality data available to decision-makers and action officers at all levels. Standard, quality data will be used in AISs, application software development, publications, forms, reports, records, and messages.

H. USE EDUCATION, TRAINING, AND CONSULTATIVE SERVICES

1. Use Education, Training, and Consultative Services

a, Description: This service is used to acquire information and instruction about the DoD Data Administration Program.

b. Purpose: To inform FDAds, CDAds, DBAds, and customers about how to operate and maintain their portions of an integrated data administration program for the Department of Defense and make use of data administration products.

c. Inputs:

(1) Classroom training.

(2) Computer-based training.

(3) Directives, Instructions, and Manuals.

(4) FDAds, CDAds, DBAds, and customers.

d. Outputs: Trained personnel capable of confidently operating their portion of the DoD Data Administration Program.

e. Activities: Use education, training, and consultative services.

2. These products are used by FDAds and CDAds to inform and advise their personnel how to successfully run a data administration program within their respective organizations and functions. Classes cover a broad range of topics including overview of the program, modeling, and data standardization; and are available in classroom or computer-based formats.

I. USE COMMON PROCEDURES AND TOOLS

1. Use Common Procedures and Tools

a. Description: These products are used to support the unambiguous exchange of data within the Department of Defense.

b. Purpose: To ensure the unambiguous exchange of data within the Department of Defense.

c. Inputs: Common procedures and tools.

d. outputs:

(1) Reused data models, information technology infrastructure, and application software.

(2) Timely and cost-effective information system development.

(3) Architectural standards for data to guide information systems design.

e. Activities: Use common procedures and tools as developed, designated, or made available by the DoD DAd and other data administrators and DBAds.

2. Common procedures and tools are used in much the same way, and for many of the same reasons, as standard, quality data: to successfully implement horizontal and vertical integration of data sharing within the Department. As with standard quality data, all members of the data administration community must strive to use common procedures (e. g., data administration manuals) and tools (e.g., software applications such as the DDRS, CASE tools, the DoD data model, re-useable software) whenever possible.

3. To support integration and consistency, the Department of Defense has approved the use of IDEFO and IDEF1 X for activity and data modeling as common modeling languages for the documentation of the Department's functions and data. They are both FIPS standards. (See reference (r) and reference (s).)